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EUDIMORPHODON AFTER 30 YEARS

HISTORY OF THE FINDING AND PERSPECTIVES

HISTORICAL BACKGROUND

On February 5th 1965, a landslide of about 25.000 m³ was detached from the side of Monte Bue close to Cene (Bergamo, Italy). This land-mass buried the quarry machines used to extract limestone (upper Calcare di Zorzino) but opened a new chapter in paleontology. Following the major land-slides there were several smaller episodes. Thanks to the report of Prof. Antonio Canova, in 1971 the first interesting fossil fish was identified by Rocco Zambelli, who was in charge of the Geological Collections in the Museo Civico di Scienze Naturali di Bergamo (MCSNB).

The MCSNB started researches in 1971 in collaboration with Matteo Malzanni, now preparator and Diego Radici (Zambelli, 1974).

During this research period a large number of vertebrates were collected; they were mainly fishes and few reptiles and invertebrate fossils.

Starting from 1982, in Bergamo museum one the main research objective is archiving conditions of conservation and potential evaluation of some of the known paleontological sites in the Bergamo area. Thanks to the exploration researches conducted, information transmitted and archived, is possible to evaluate potentials of Cene and other sites.

This article is therefore dedicated, as an important reference and acknowledgement, to the first founders who studied and gave value to the specimen.

DISCOVERY

The MCSNB was fully engaged in 1973 in the fossils research at Cene. Particularly the studies conducted by Zambelli on the pholidophorids attracted the attention of many researchers.

The specimen MCSNB 2888 was discovered during the field work of the museum by the preparator Mario Pandolfi (Fig.1).

The slab was taken in museum from the quarry and only few months later it was opened, the first preparation permitted to identify the significance of specimen.

It was Rocco Zambelli (1973) who first described the new genus and species of *Eudimorphodon ranzii* and published the news in a local newspaper on October 12th. This specimen is the most famous of all the collections of MCSNB and it became part of the logos of Museum and Paleontological Park of Cene.

The slab that contained the specimen was lacking in some parts. This can be seen in the counterpart stored in the museum collection. In fact, the 1965 landslide crushed the major part of the fossiliferous layer to debris, leaving patches of the massive

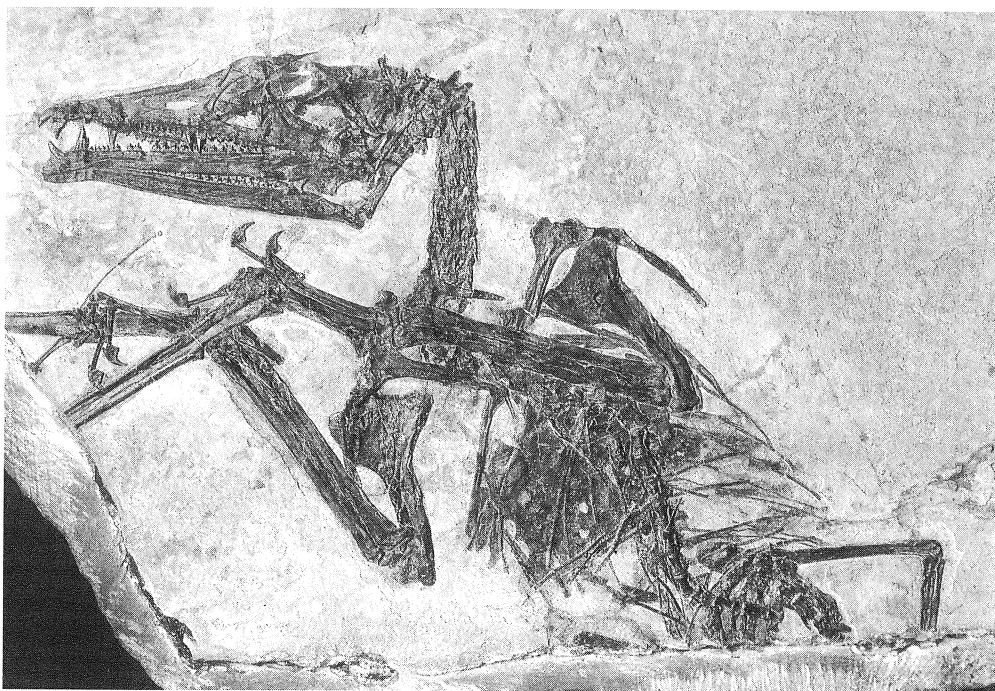


Figura 1. *Eudimorphodon ranzii*, Zambelli. MCSNB 2888

limestone that was known as the 11th stratigraphic level from the 1996 new excavation period.

Stratigraphic log of the excavations conducted during the seventies are documented only in some field notes (Zambelli, 1980). These notes report that the main fossiliferous layers of Cene during the earlier excavations constitute 6 thin successive layers forming an 8 cm thick bed.

Researches for fossils in the landslide deposit that continued from 1996 and a new concession allowed by the Ministero dei Beni Culturali (1997) are still active. Now we have more informations, field researches are stratigraphic and sistematic so we can have an overview of the main fossil bed with coprolites, fishes and few reptiles, where the landslide of Cene took place; it has a maximum thickness of 22 cm. The investigated part of same fossiliferous bed has a maximum thickness of 12 cm and consists 21 thin layers. Precisely defined benchmarks forming a reference grid are laid-out at the Cene site, to locate exactly the position of every extracted fossil.

CONSERVATION

The specimen, MCSNB 2888 was extracted and conserved from the top part of the 14th layer of the principal fossiliferous bed of Cene. This limestone layer is dark gray (light brown when altered), thinly laminated and with cross-beddings (Zambelli, 1980 - unpublished report). The first cleaning and conservation operation (preparation) of the specimen was done by Rocco Zambelli using metallic needles and arabica glue

and Paraloid B72 to reinforce the weak parts.

Rupert Wild (Stuttgart Museum), during his first visit to our museum, November and December 1974, uncovered some parts of the specimen after cleaning and preparation, adopting similar methods and same chemicals used by our technicians (Wild pers. comm. - 2001).

After the full description, the specimen was temporarily deposited in a secured box of a bank until its final allocation in a secured glassy show case. The precarious conditions of the marly–limestone matrix was particularly reinforced by a slate slab brought from Carona, that belongs to the Permian Collio Formation. The specimen was first displayed with a support that was vertically suspended, but this choice was not correct. The unstable conditions of the matrix obliged to change the display in 1993. The reorganization of the Upper Triassic fossils hall, an inclined support was designed for this specimen. The preparator Mario Pandolfi carried out further interventions on the stress cavities formed between the matrix and the support. In 1999, during the predisposition of the hall “Bergamo 220 milioni di anni fa”, an accurate survey of the superficial fractures of the specimen was done by preparators Federico Confortini and Matteo Malzanni. Periodical check-ups of the conservation conditions are conducted using photograph techniques. Irreversible operations, rehydration even temporarily are not allowed. Specialists study are also limited in order to avoid thermal and hygrometric shocks. Due to these operations some level of stability of the specimen has been obtained, but at present new interventions of conservation are needed.

STUDIES

The Cene typical specimen and successive discoveries in the same quarry, were brought to the knowledge of the international scientific community thanks to Wild (1978) remarkable work. In his monograph, six Triassic pterosaurs skeletons or parts of them are classified *Eudimorphodon ranzii* and *Peteinosaurus zambellii*.

These studies and others carried-out by many specialists on the Triassic fauna of Calcare di Zorzino (Zorzino Limestone = ZZ) and Argillite di Riva di Solto (Riva di Solto Shale = ARS) have attracted the interest of many researchers that visited the Upper Triassic collection of the MCSNB.

A large number of scientific, popular and didactic published articles imply the importance of this specimen extending the knowledge to the non specialists.

CENE PALEONTOLOGICAL PARK

The MCSNB cultural interest for the deposits of Cene wasn't exhausted in the '70s. Cene wasn't an exception, successive discoveries of Upper Triassic paleontological deposits in the Zorzino Limestone (Endenna, Brembilla, Poscante) and in the Riva di Solto Shales (Berbenno) in Bergamo Prealps stopped researches in Cene. Since 1976 the deposit of Cene was subject to a slow and progressive degradation, in that time it was generally considered to have exhausted from the scientific point of view.

However the author's geological investigations in the Bergamo province in the main paleontological deposits, that were assigned by the Bergamo Municipality in 1983, showed new potentialities of the site.

In those years lack of funds limited possibilities of researches in the Cene site, because the museum was already involved in the researches of Lefte Lower Pleistocene lacustrine basin (where important urbanization works were done) and in field researches on the Upper Triassic deposit of the Berbenno in Valle Imagna .

In 1984 the owners of the quarry area (protected by a State Obligation), asked to remove every charge. The report written for the archeological service, on the basis of surveys carried-out, confirmed the interest for the area and the need of a new research phases.

After the 1991 repeated investigations, thanks to the agreement with the technical service of the Comunità Montana Valle Seriana (Amerio G., Paganoni A., & Panseri M., 1994) the site was reclaimed and the quarry area was bought in 1995/1996.

The project, realized and enlarged in the following years (Regione Lombardia, 1998) has brought to the acquisition of the area (today a public property), the environmental reclamation of the site and the construction of a multifunctional building opened in June 2002.

Since 1996 field researches restarted and 3600 new fossils were discovered. About 50% of these are stratigraphically extracted from the levels exposed by the landslides. Some are found during the landslide security preparatory works, others during the preparation of the naturalistic route and some while erecting the fence of the Park.

Inside the building a permanent exhibition has been arranged (Aiello A., Paganoni A., 2003 in this Rivista), provided of books and didactical equipments. The Park is dedicated to open-air didactical activities and in the occasion of the workshop (November 9th, 2003) a new naturalistic route will be opened (Aiello A., Lodovici O, Stabulum G., 2003 in this Rivista).

The Park, even if it has an autonomous management, has a very strong link to the scientific and didactic sector of the MCSNB.

This year the first course for didactic operators for the Triassic territory system has been realized (February - June 2003). Now Park and Museum are two different but supplementary institutions to explore, understand and test *how* and *where* the fossils were formed (Cene Paleontological Park), identify and exhibit the fossils in the museum.

ACKNOWLEDGEMENTS

Rocco Zambelli, Rupert Wild and Mario Pandolfi, for their informations regarding the discovery and the preparation of the specimen.

Maurizio Panseri, Matteo Malzanni and Federico Confortini for their support in the project of the Paleontological Park.

Antonio Canova, Carlo Barbero, Silvio Ranzi and Antonio Valle will be always remembered for their support in the realization of the paleontological research site of Cene.

Bergamo Municipality has financed the excavation works in the Cene fossil site.

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